Dell Vostro 2521
Owner's Manual

Regulatory Model: P27F
Regulatory Type: P27F001

Notes, Cautions, and Warnings

NOTE: A NOTE indicates important information that helps you make better use of your computer.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

2012 – 12

Rev. A00

Contents

1

Working on Your Computer

Before Working Inside Your Computer

Use the following safety guidelines to help protect your computer from potential damage and to help to ensure your personal safety. Unless otherwise noted, each procedure included in this document assumes that the following conditions exist:

- You have performed the steps in Working on Your Computer.
- You have read the safety information that shipped with your computer.
- A component can be replaced or--if purchased separately--installed by performing the removal procedure in reverse order.

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance

CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.

CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface, such as a connector on the back of the computer.

CAUTION: Handle components and cards with care. Do not touch the components or contacts on a card. Hold a card by its edges or by its metal mounting bracket. Hold a component such as a processor by its edges, not by its pins.

CAUTION: When you disconnect a cable, pull on its connector or on its pull-tab, not on the cable itself. Some cables have connectors with locking tabs; if you are disconnecting this type of cable, press in on the locking tabs before you disconnect the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, ensure that both connectors are correctly oriented and aligned.

NOTE: The color of your computer and certain components may appear differently than shown in this document.

To avoid damaging your computer, perform the following steps before you begin working inside the computer.

1. Ensure that your work surface is flat and clean to prevent the computer cover from being scratched.
2. Turn off your computer (see Turning Off Your Computer).
3. If the computer is connected to a docking device (docked) such as the optional Media Base or Battery Slice, undock it.

   CAUTION: To disconnect a network cable, first unplug the cable from your computer and then unplug the cable from the network device.

4. Disconnect all network cables from the computer.
5. Disconnect your computer and all attached devices from their electrical outlets.

6. Close the display and turn the computer upside-down on a flat work surface.

   NOTE: To avoid damaging the system board, you must remove the main battery before you service the computer.

7. Remove the main battery.
8. Turn the computer top-side up.
9. Open the display.
10. Press the power button to ground the system board.

   CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before opening the display.

   CAUTION: Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate static electricity, which could harm internal components.

11. Remove any installed ExpressCards or Smart Cards from the appropriate slots.

Turning Off Your Computer

CAUTION: To avoid losing data, save and close all open files and exit all open programs before you turn off your computer.

1. Shut down the operating system:
   – In Windows 8:
     * Using a touch-enabled device:
       a. Swipe in from the right edge of the screen, opening the Charms menu and select **Settings**.
       b. Select the and then select **Shut down**
     * Using a mouse:
       a. Point to upper-right corner of the screen and click **Settings**.
       b. Click the and select **Shut down**.
   – In Windows 7:
     1. Click **Start**.
     2. Click **Shut Down.**

   or

     1. Click **Start**.
     2. Click the arrow in the lower-right corner of the **Start** menu as shown below, and then click **Shut Down.**.



2. Ensure that the computer and all attached devices are turned off. If your computer and attached devices did not automatically turn off when you shut down your operating system, press and hold the power button for about 6 seconds to turn them off.

After Working Inside Your Computer

After you complete any replacement procedure, ensure you connect any external devices, cards, and cables before turning on your computer.

CAUTION: To avoid damage to the computer, use only the battery designed for this particular Dell computer. Do not use batteries designed for other Dell computers.

1. Connect any external devices, such as a port replicator, battery slice, or media base, and replace any cards, such as an ExpressCard.
2. Connect any telephone or network cables to your computer.

   CAUTION: To connect a network cable, first plug the cable into the network device and then plug it into the computer.

3. Replace the battery.
4. Connect your computer and all attached devices to their electrical outlets.
5. Turn on your computer.

2

Removing and Installing Components

This section provides detailed information on how to remove or install the components from your computer.

Recommended Tools

The procedures in this document may require the following tools:

- Small flat-blade screwdriver
- Phillips screwdriver
- Small plastic scribe

Removing the Secure Digital (SD) Card

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Press in on the SD memory card to release it from the computer.



Installing the Secure Digital (SD) Card

1. Push the memory card into the compartment until it clicks into place.
2. Follow the procedures in *After Working Inside Your Computer*.

Removing the Battery

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Slide the release latches outwards to unlock the battery and lift the battery to remove it from the computer.

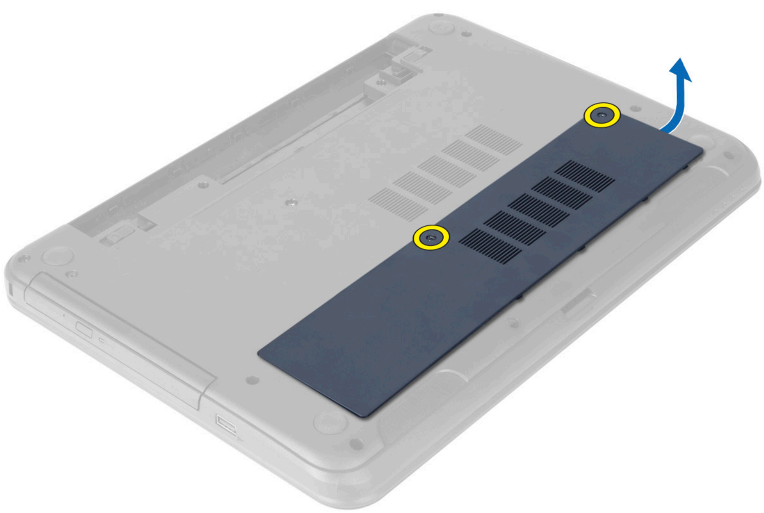


Installing the Battery

1. Slide the battery into its slot until it clicks into place.
2. Follow the procedures in *After Working Inside Your Computer*.

Removing the Access Panel

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the battery.
3. Loosen the captive screws that secure the access panel and remove it from the computer.



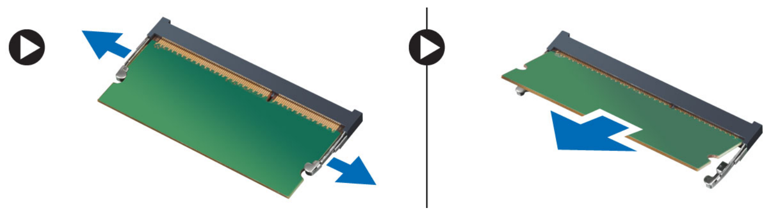
Installing the Access Panel

1. Slide the access panel into its slot.
2. Tighten the screws to secure the access panel to the computer.

3. Install the battery.
4. Follow the procedures in *After Working Inside Your Computer*.

Removing the Memory Module

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove:
   a) battery
   b) access panel
3. Pry the securing clips away from the memory module until it pops up. Remove the memory module from its socket on the system board.



Installing the Memory Module

1. Insert the memory module into the memory socket and press until it clicks into place.
2. Install:
   a) access panel
   b) battery
3. Follow the procedures in *After Working Inside Your Computer*.

Removing the Hard-Drive Assembly

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove:
   a) battery
   b) access panel
3. Remove the screws that secure the hard-drive assembly to the computer.



4. Slide the hard drive in the direction shown and lift the tab to remove it from the computer.



5. Remove the screw that secures the hard-drive caddy to the hard drive and remove it.



Installing the Hard-Drive Assembly

1. Align the hard drive on the hard-drive bracket and snap it into place.
2. Tighten the screws to secure the hard drive to the hard-drive bracket.
3. Slide the hard-drive assembly in its slot in the computer.
4. Replace the screws to secure the hard-drive assembly to the computer.
5. Install:
   a) memory module
   b) access panel
   c) battery
6. Follow the procedures in *After Working Inside Your Computer*.

Removing the Optical-Drive Assembly

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the battery.
3. Remove the screw that secures the optical drive and slide it out of the drive bay.



4. Remove the screws that secure the optical-drive bracket to the optical-drive assembly.



5. Remove the optical-drive bracket from the optical-drive assembly.
6. Pry the optical-drive bezel and remove it from the optical-drive assembly.

Installing the Optical-Drive Assembly

1. Place the optical-drive bezel on the optical drive and snap it in place.
2. Place the optical-drive bracket in to the optical drive.
3. Tighten the screws to secure the bracket to the optical-drive assembly.
4. Slide the optical-drive assembly into the drive bay in the computer.
5. Tighten the screw to secure the optical-drive assembly to the computer.
6. Install the battery.
7. Follow the procedures in *After Working Inside Your Computer*.

Removing the Keyboard

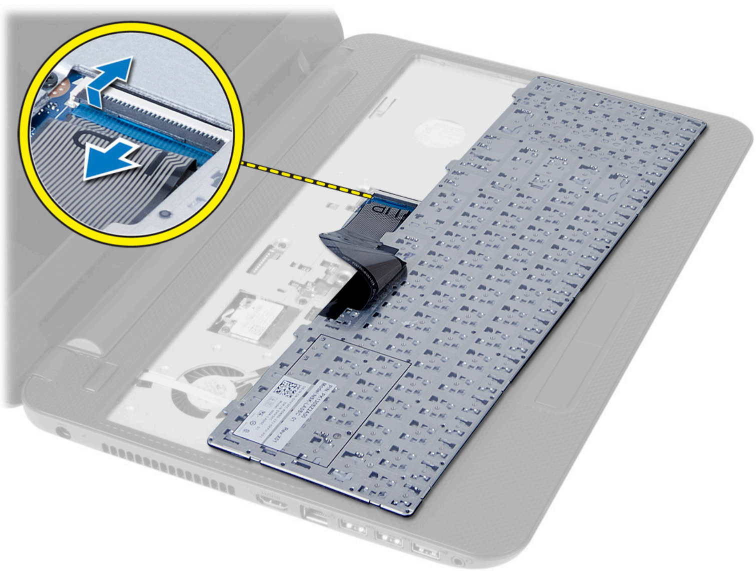
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove the battery.
3. Release the keyboard by pressing the tabs on the palmrest assembly.



4. Slide the keyboard towards the display assembly and flip the keyboard over the palmrest assembly.



5. Disconnect the keyboard cable from the connector on the system board and lift the keyboard off the palmrest assembly.

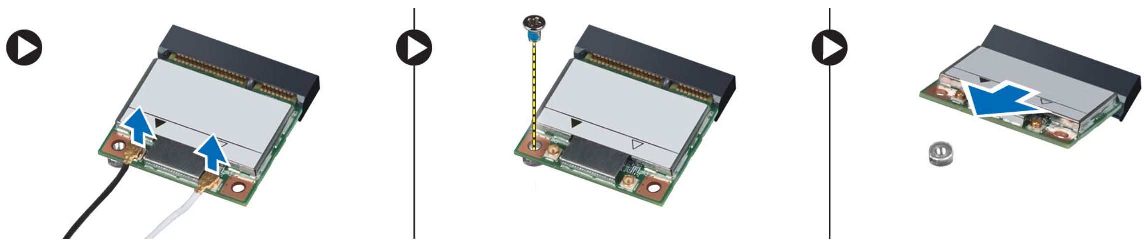


Installing the Keyboard

1. Connect the keyboard cable to the connector on the system board.
2. Slide the keyboard in its place on the computer and snap it into place.
3. Install the battery.
4. Follow the procedures in *After Working Inside Your Computer*.

Removing the Wireless Mini-Card

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove:
   a) battery
   b) access panel
   c) memory module
   d) optical-drive assembly
   e) keyboard
3. Disconnect the antennae from the card, remove the screw and remove the wireless mini-card from its slot on the system board.

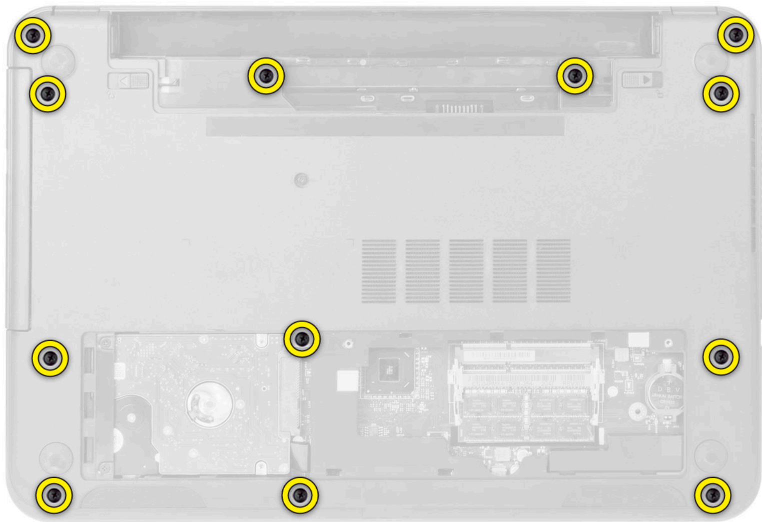


Installing the Wireless Mini-Card

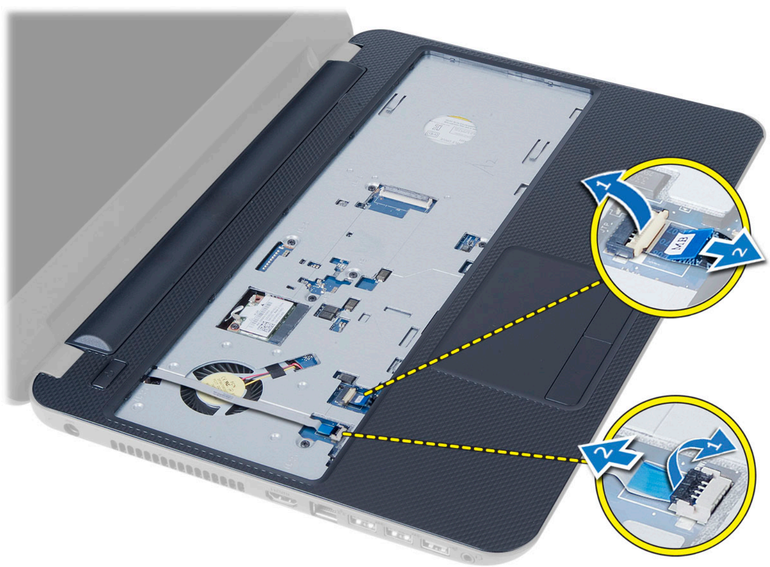
1. Connect the antenna cables to their respective connectors marked on the wireless mini-card.
2. Insert the wireless mini-card into its connector at a 45–degree angle into its slot.
3. Press down the wireless mini-card and tighten the screw to secure the wireless mini-card to the computer.
4. Install:
   a) keyboard
   b) optical-drive assembly
   c) memory module
   d) access panel
   e) battery
5. Follow the procedures in *After Working Inside Your Computer*.

Removing the Palmrest

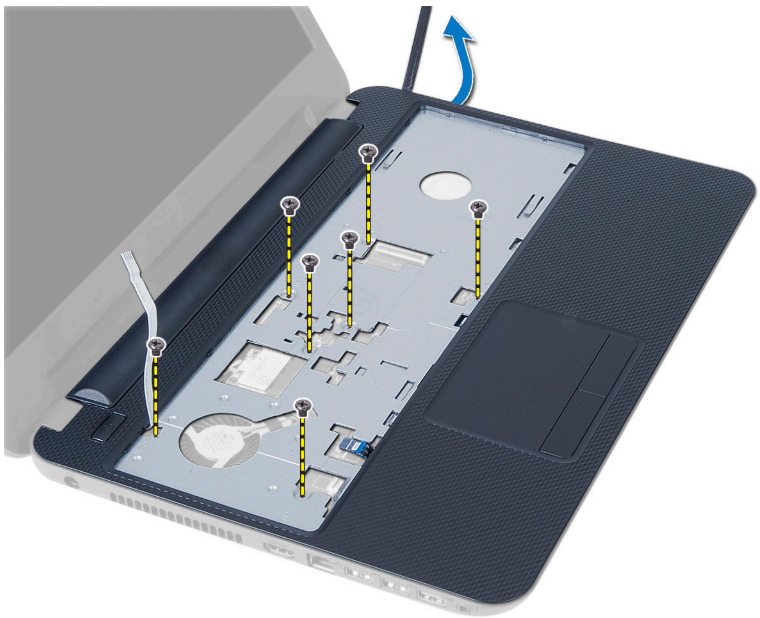
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove:
   a) battery
   b) access panel
   c) memory module
   d) optical-drive assembly
   e) keyboard
3. Remove the screws that secure the palmrest to the computer.



4. Flip the computer and disconnect the touchpad cable and power-button cables from the system board.



5. Remove the screws that secure the palmrest to the system board. Lift and release the tabs on palmrest from the slots on the computer. and lift the palmrest from the computer.

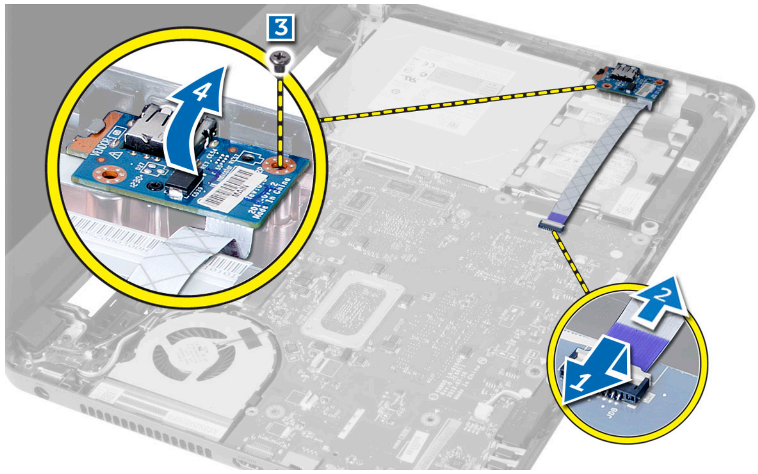


Installing the Palmrest

1. Align and press the plamrest on the computer until it snap into place at all sides.
2. Connect the touchpad cable and the power-button cables to the system board.
3. Tighten the screws to secure the palmrest to the system board.
4. Flip the computer and tighten the screws to secure the palmrest to the computer.
5. Install:
   a) keyboard
   b) optical-drive assembly
   c) memory module
   d) access panel
   e) battery
6. Follow the procedures in *After Working Inside Your Computer*.

Removing the Input/Output (I/O) Board

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove:
   a) battery
   b) access panel
   c) keyboard
   d) palmrest
3. Disconnect the I/O cable from the system board.
4. Remove the screw that secures the I/O board to the computer and lift the I/O board from the computer.



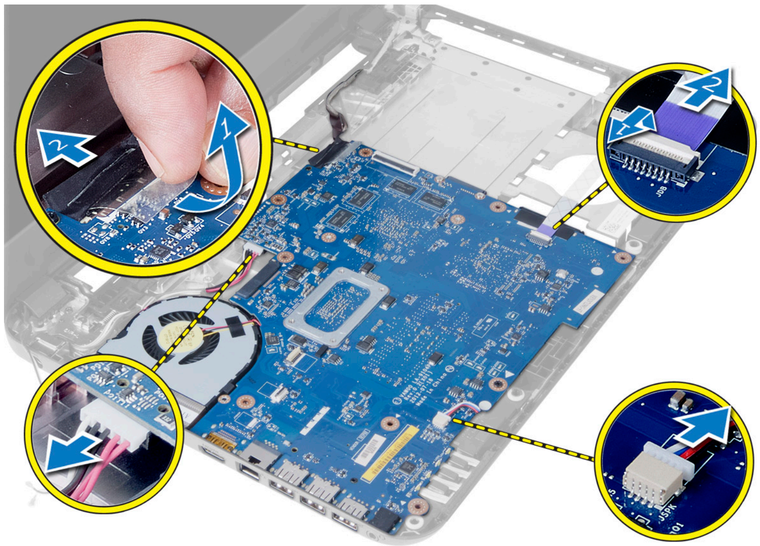
Installing the Input/Output (I/O) Board

1. Place the I/O board in its slot and snap it in place.
2. Tighten the screw to secure the I/O board to the computer.
3. Connect the I/O cable to the system board.
4. Install:
   a) palmrest
   b) keyboard
   c) optical-drive assembly
   d) memory module
   e) access panel
   f) battery
5. Follow the procedures in *After Working Inside Your Computer*.

Removing the System Board

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove:
   a) battery
   b) access panel
   c) memory module
   d) hard-drive assembly
   e) SD card
   f) optical-drive assembly
   g) keyboard
   h) palmrest
   i) wireless mini-card
3. Peel the tape that secures the display cable to the system board.
4. Disconnect the display cable from the connector on the system board.
5. Disconnect the following cables:
   a) DC-In port cable
   b) speaker cable

c) I/O board cable



6. Remove the screw that secures the system board to the computer.
7. Lift the system board from the computer.



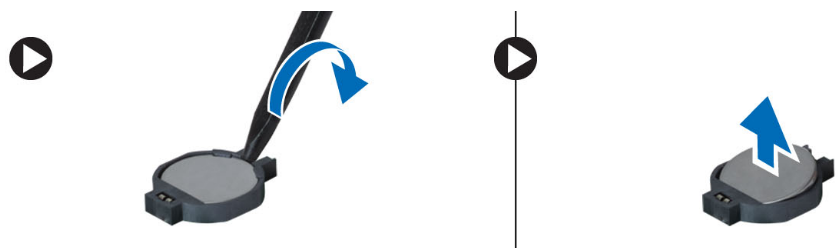
Installing the System Board

1. Align the system board in its place on the computer.
2. Tighten the screw to secure the system board to the computer.
3. Connect the following cable to the connectors on the system board:
   a) DC-In port cable
   b) speaker cable
   c) I/O board cable
4. Connect the display cable to the system board.
5. Affix the tape to secure the display cable to the system board.

6. Install:
   a) wireless mini-card
   b) palmrest
   c) keyboard
   d) optical-drive assembly
   e) SD card
   f) hard-drive assembly
   g) memory module
   h) access panel
   i) battery
7. Follow the procedures in *After Working Inside Your Computer*.

Removing the Coin-Cell Battery

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove:
   a) battery
   b) access panel
   c) memory module
   d) hard-drive assembly
   e) optical-drive assembly
   f) keyboard
   g) palmrest
   h) wireless mini-card
   i) system board
3. Flip the system board and place it on a flat surface.
4. Pry out the coin-cell battery from the system board.



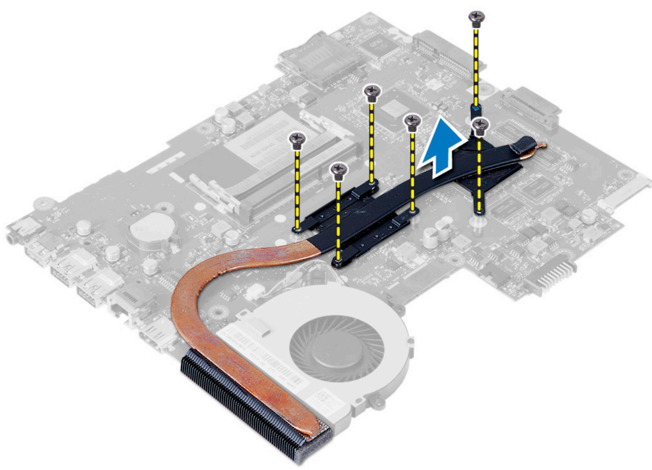
Installing the Coin-Cell Battery

1. Place the coin-cell battery in its slot.
2. Install:
   a) system board
   b) wireless mini-card
   c) palmrest
   d) keyboard
   e) optical-drive assembly
   f) hard-drive assembly
   g) memory module
   h) access panel
   i) battery

3. Follow the procedures in *After Working Inside Your Computer*.

Removing the Heatsink

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove:
   a) battery
   b) access panel
   c) memory module
   d) hard-drive assembly
   e) optical-drive assembly
   f) keyboard
   g) palmrest
   h) wireless mini-card
   i) system board
3. Flip the system board and place it on a flat surface.
4. Remove the screws that secure the heatsink to the system board. Lift the heatsink from the system board.

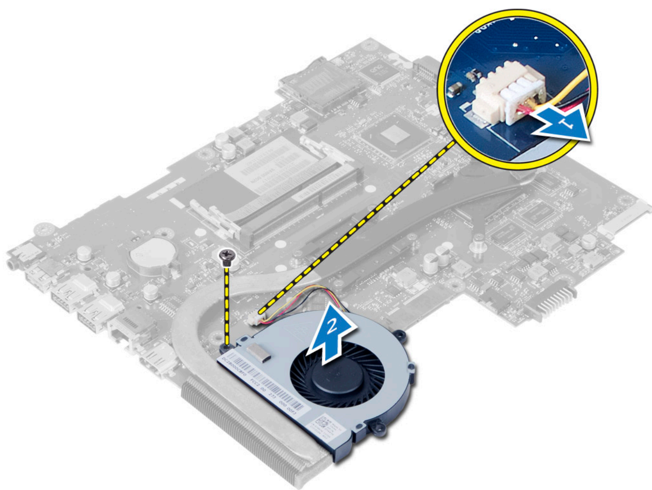


Installing the Heatsink

1. Align the heatsink in its place on the system board.
2. Tighten the screws to secure the heatsink to the system board.
3. Install:
   a) system board
   b) wireless mini-card
   c) palmrest
   d) keyboard
   e) optical-drive assembly
   f) hard-drive assembly
   g) memory module
   h) access panel
   i) battery
4. Follow the procedures in *After Working Inside Your Computer*.

Removing the System Fan

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove:
    a) battery
    b) access panel
    c) memory module
    d) hard-drive assembly
    e) optical-drive assembly
    f) keyboard
    g) palmrest
    h) wireless mini-card
    i) system board
3. Disconnect the system-fan cable.
4. Remove the screw that secures the system fan to the system board.
5. Lift the system fan from the computer.



Installing the System Fan

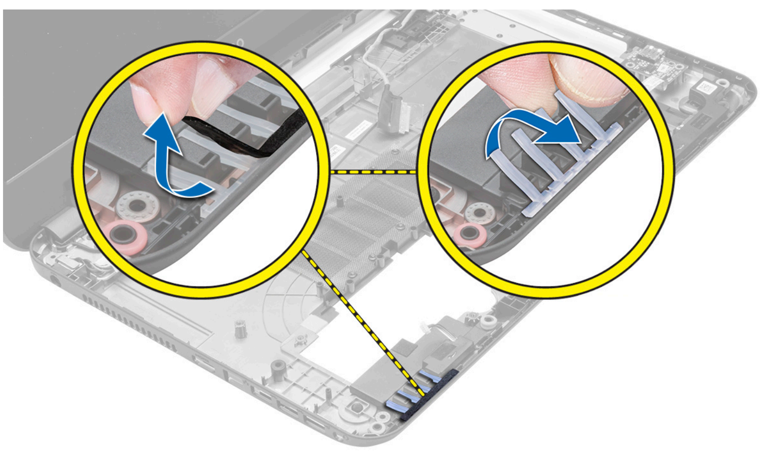
1. Align the system fan in its place on the system board.
2. Tighten the screw to secure the system fan to the computer.
3. Connect the system-fan cable to the system board.
4. Install:
    a) system board
    b) wireless mini-card
    c) plamrest
    d) keyboard
    e) optical-drive assembly
    f) hard-drive assembly
    g) memory module
    h) access panel

i) battery

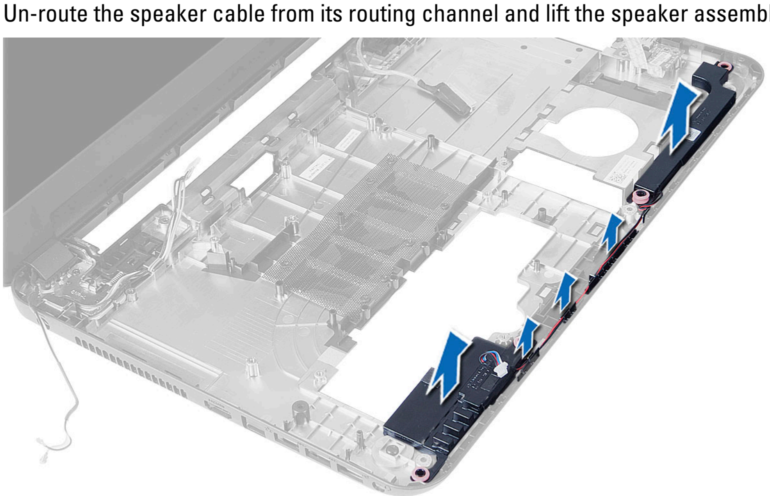
5. Follow the procedures in *After Working Inside Your Computer*.

Removing the Speakers

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove:
   a) battery
   b) access panel
   c) memory module
   d) hard-drive assembly
   e) optical-drive assembly
   f) keyboard
   g) plamrest
   h) wireless mini-card
   i) system board
3. Peel the tape that secures the LED silicon tubes to the computer.
4. Lift and remove the LED silicon tubes from the computer.



5. Un-route the speaker cable from its routing channel and lift the speaker assembly from the computer.

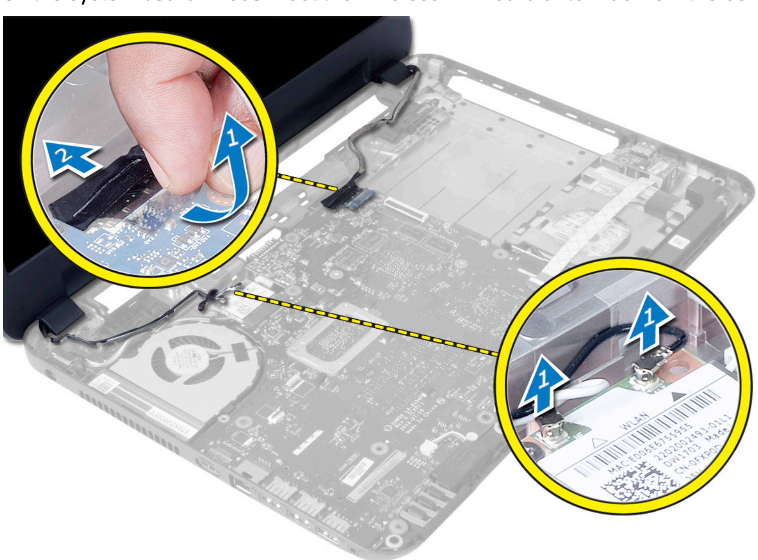


Installing the Speakers

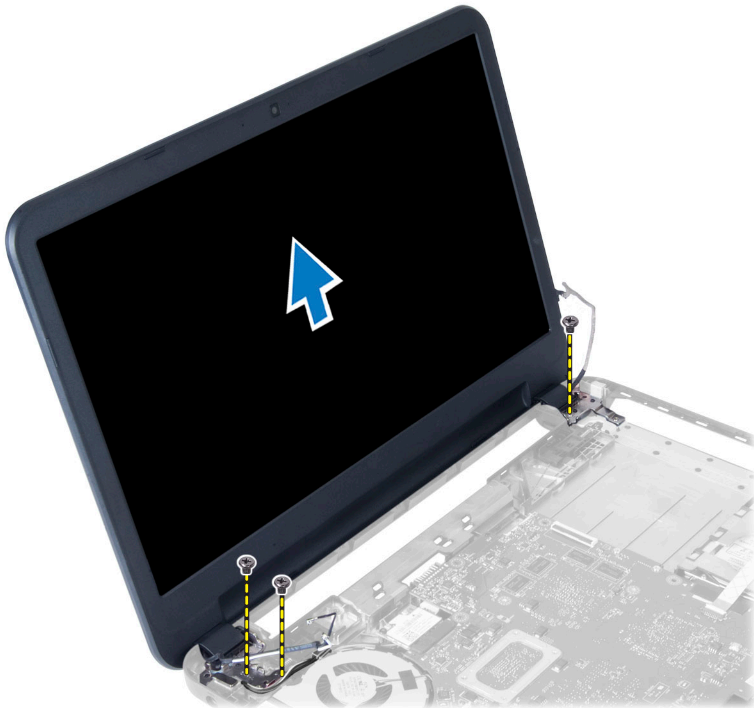
1. Place the speaker assembly in its slot and route the cables through the channels.
2. Replace the LED silicon tubes to the computer.
3. Affix the tape that secures the LED silicon tubes to the computer.
4. Install:
   a) system board
   b) wireless mini-card
   c) palmrest
   d) keyboard
   e) optical-drive assembly
   f) hard-drive assembly
   g) memory module
   h) access panel
   i) battery
5. Follow the procedures in *After Working Inside Your Computer*.

Removing the Display Assembly

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove:
   a) battery
   b) access panel
   c) memory module
   d) hard-drive assembly
   e) optical-drive assembly
   f) keyboard
   g) palmrest
3. Peel the tape that secures the LVDS and camera cables to the system board and disconnect them from connector on the system board. Disconnect the wireless-mini card antennae from the connector on the system board.



4. Move the LVDS and camera cable aside and remove the screws that secure the display assembly to the computer and lift the display assembly off the computer.



Installing the Display Assembly

1. Place the display assembly on the computer.
2. Tighten the screws to secure the LVDS and camera assembly to the computer.
3. Connect the wireless mini-card antennae to the connectors on the wireless mini-card.
4. Connect the display and power port cables to the system board.
5. Affix the tape that secures the display cable to the computer.
6. Install:
   a) palmrest
   b) keyboard
   c) optical-drive assembly
   d) hard-drive assembly
   e) memory module
   f) access panel
   g) battery
7. Follow the procedures in *After Working Inside Your Computer*.

Removing the Display Bezel

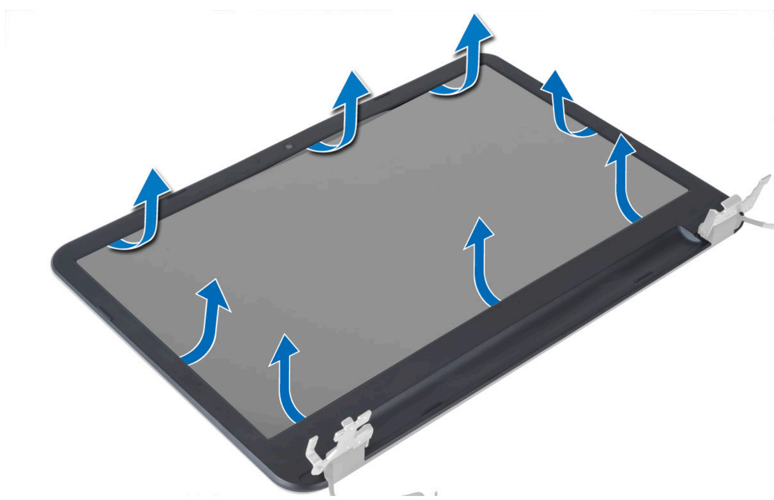
1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove:
   a) battery
   b) access panel

c) memory module
d) hard-drive assembly
e) optical-drive assembly
f) keyboard
g) palmrest
h) display assembly

3. Press the hinge cover on the side. Lift and remove it from the computer.



4. Pry the edges of the display bezel. Remove the display bezel from the computer.



Installing the Display Bezel

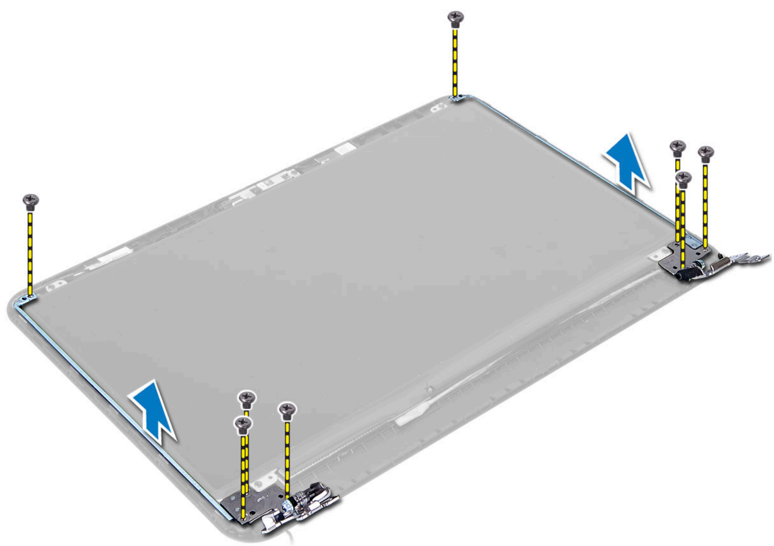
1. Align the display bezel in place and snap it in place.
2. Align the hinge covers on display assembly and snap it in place.
3. Install:
   a) display assembly
   b) palmrest
   c) keyboard
   d) optical-drive assembly

e) hard-drive assembly
f) memory module
g) access panel
h) battery

4. Follow the procedures in *After Working Inside Your Computer*.

Removing the Display Hinges

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove:
   a) battery
   b) access panel
   c) memory module
   d) hard-drive assembly
   e) optical-drive assembly
   f) keyboard
   g) plamrest
   h) display assembly
   i) display bezel
3. Remove the screws that secure the display hinges to the display panel.
4. Lift the display hinges off the display panel.



Installing the Display Hinges

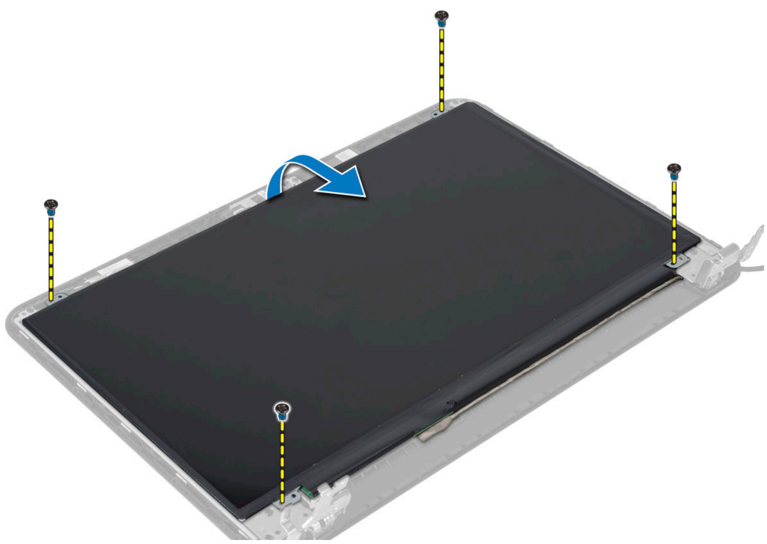
1. Place the display hinge in its place on the display panel.
2. Tighten the screws to secure the display hinge to the display panel.
3. Install:
   a) display bezel
   b) display assembly
   c) palmrest
   d) keyboard
   e) optical-drive assembly

f) hard-drive assembly
g) memory module
h) access panel
i) battery

4. Follow the procedures in *After Working Inside Your Computer*.

Removing the Display Panel

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove:
   a) battery
   b) access panel
   c) memory module
   d) hard-drive assembly
   e) optical-drive assembly
   f) keyboard
   g) plamrest
   h) display assembly
   i) display bezel
3. Remove the screws that secure the display panel to the computer. Lift the display panel and flip it.



4. Peel the tape that secures display cable and disconnect the cable from the connector. Remove the display panel from the display assembly.



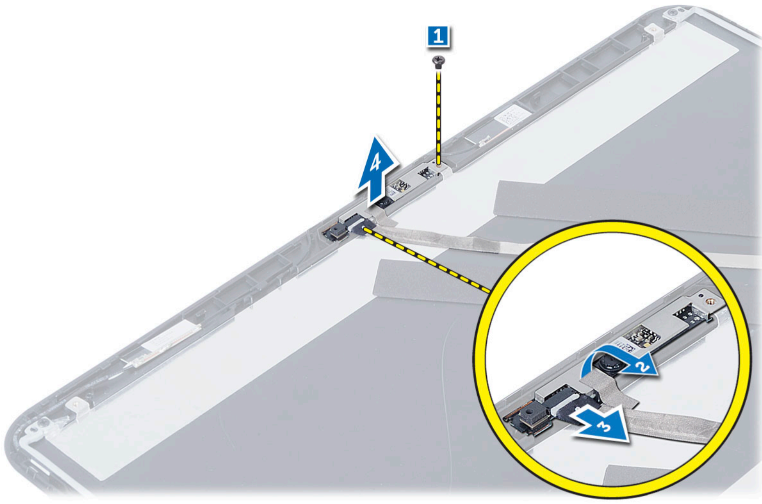
Installing the Display Panel

1. Connect the display cable to display panel.
2. Affix the tape to secure the display cable.
3. Place the display panel on the computer.
4. Tighten the screws to secure the display panel to the computer.
5. Install:
   a) display bezel
   b) display assembly
   c) palmrest
   d) keyboard
   e) optical-drive assembly
   f) hard-drive assembly
   g) memory module
   h) access panel
   i) battery
6. Follow the procedures in *After Working Inside Your Computer*.

Removing the Camera Module

1. Follow the procedures in *Before Working Inside Your Computer*.
2. Remove:
   a) battery
   b) memory module
   c) hard-drive assembly
   d) optical-drive assembly
   e) keyboard
   f) palmrest
   g) display assembly
   h) display bezel

3. Remove the screw, peel the tape and disconnect the camera cable from the connector and remove the camera module from the display assembly.



Installing the Camera Module

1. Connect the camera cable to the connector on the camera module.
2. Align the camera module in its position on the computer.
3. Tighten the screw to secure the camera module to the computer.
4. Affix the tape to the camera module.
5. Install:
   a) display bezel
   b) display assembly
   c) palmrest
   d) keyboard
   e) optical-drive assembly
   f) hard-drive assembly
   g) memory module
   h) battery
6. Follow the instructions in *After Working Inside Your Computer*.

3

System Setup

System Setup enables you to manage your computer hardware and specify BIOS-level options. From the System Setup, you can:

- Change the NVRAM settings after you add or remove hardware
- View the system hardware configuration
- Enable or disable integrated devices
- Set performance and power management thresholds
- Manage your computer security

Boot Sequence

Boot Sequence allows you to bypass the System Setup-defined boot device order and boot directly to a specific device (for example: optical drive or hard drive). During the Power-on Self Test (POST), when the Dell logo appears, you can:

- Access System Setup by pressing <F2> key
- Bring up the one-time boot menu by pressing <F12> key

The one-time boot menu displays the devices that you can boot from including the diagnostic option. The boot-menu options are:

- Removable Drive (if available)
- STXXXX Drive

  NOTE: XXX denotes the SATA drive number.

- Optical Drive
- Diagnostics

  NOTE: Choosing Diagnostics, will display the **ePSA diagnostics** screen.

The boot sequence screen also displays the option to access the System Setup screen.

Navigation Keys

The following table displays the system setup navigation keys.

NOTE: For most of the system setup options, changes that you make are recorded but do not take effect until you restart the system.

Table 1. Navigation Keys

Keys	Navigation
Up arrow	Moves to the previous field.
Down arrow	Moves to the next field.

Keys	Navigation
<Enter>	Allows you to select a value in the selected field (if applicable) or follow the link in the field.
Spacebar	Expands or collapses a drop-down list, if applicable.
<Tab>	Moves to the next focus area. **NOTE:** For the standard graphics browser only.
<Esc>	Moves to the previous page till you view the main screen. Pressing <Esc> in the main screen displays a message that prompts you to save any unsaved changes and restarts the system.
<F1>	Displays the System Setup help file.

System Setup Options

NOTE: The system setup options may vary depending on the computer model.

The Main tab lists out the primary hardware features of the computer. The table below defines the function of each option.

Table 2. Main Options

Option		Description
System Time		Allows you to reset the time on the computer's internal clock.
System Date		Allows you to reset the date on the computer's internal calendar.
BIOS Version		Displays the BIOS revision.
Product Name		Displays the product name and the model number.
Service Tag		Displays the service tag of your computer.
Asset Tag		Displays the asset tag of your computer (if available).
CPU Type		Displays the type of processor.
CPU Speed		Displays the speed of the processor.
CPU ID		Displays the processor ID.
CPU Cache		
	L1 Cache	Displays the processor L1 cache size.
	L2 Cache	Displays the processor L2 cache size.

Option	Description
L3 Cache	Displays the processor L3 cache size.
Fixed HDD	Displays the model number and capacity of the hard drive.
SATA ODD	Displays the model number and capacity of the optical drive.
AC Adapter Type	Displays the type of the AC adapter.
Total Memory	Displays the memory installed on the computer.
System Memory Speed	Displays the memory speed.

The Advanced tab allows you to set various functions that affect the performance of the computer. The table below defines the function of each option and its default value.

Table 3. Advance Options

Option	Description	
Intel SpeedStep	Enable or disable the Intel SpeedStep feature.	Default: Enabled
Virtualization	Enable or disable the Intel Virtualization feature.	Default: Enabled
Integrated NIC	Enable or disable the power supply to the on–board network card.	Default: Enabled
USB Emulation	Enable or disable the USB emulation feature.	Default: Enabled
USB Wake Support	Allows USB devices to wake-up the computer from standby. This feature is enabled only when the AC adapter is connected.	Default: Disabled
SATA Operation	Change the SATA controller mode to either ATA or AHCI.	Default: AHCI
Adapter Warnings	Enables or disables adapter warnings.	Default: Enabled
Function Key Behavior	Specifies the behavior of the function key <Fn> .	Default: Function key first
Battery Health	Specifies the health of the battery.	

Option		Description	
Miscellaneous Devices		These fields let you enable or disable various on-board devices.	
	External USB Ports	Enables or disables external USB ports.	Default: Enabled
	Microphone	Enables or disables microphone.	Default: Enabled
	Camera	Enables or disables camera.	Default: Enabled
	Internal Bluetooth	Enables or disables internal bluetooth.	Default: Enabled
	Internal WLAN	Enables or disables WLAN.	Default: Enabled
	Media Card Reader	Enables or disables media card reader.	Default: Enabled
	Optical Drive	Enables or disables optical drive.	Default: Enabled
	Boot Disable	Enables or disables boot.	Default: Disabled
	USB debug	Enables or disables USB debug.	Default: Disabled

The Security tab displays the security status and allows you to manage the security features of the computer.

Table 4. Security Options

Option	Description
Admin Password	This field displays if a admin password is set for this computer or not (Default: Cleared/Not installed)
System Password	This field displays if a system password is set for this computer or not (Default: Cleared/Not installed)
Hdd Password State	This field displays if a HDD password is set for this computer or not (Default: Cleared)
Password Change	Allows you to add/remove permission for changing passwords.
Password Bypass	Allows you to bypass the system password and the internal HDD password prompts during a system restart/ resume from hibernate state. (Default: Disabled)
Computrace	Enable or disable the Computrace feature on your computer.

The Boot tab allows you to change the boot sequence.

Table 5. Boot Options

Option	Description
Secure Boot	Allows you to boot securely. (Default: Disabled)
Load Legacy Option ROM	Allows you to load legacy option. (Default: Disabled)
Boot List Option	Allows you to view the boot options.
Add Boot Option	Allows you to add a boot option.
Delete a Boot Option	Allows you to delete a boot option.
View Boot Option Properties	Allows you to view the properties of the boot option.

Exit — This section allows you to save, discard, and load default settings before exiting from System Setup.

Updating the BIOS

It is recommended to update your BIOS (system setup), on replacing the system board or if an update is available. For notebooks, ensure that your computer battery is fully charged and connected to a power outlet

1. Restart the computer.
2. Go to **support.dell.com/support/downloads**.
3. If you have your computer's Service Tag or Express Service Code:

   NOTE: For desktops, the service tag label is available on the front of your computer.

   NOTE: For notebooks, the service tag label is available on the bottom of your computer.

   NOTE: For All-In-One Desktops, the service tag label is available at the back of your computer.

   a) Enter the **Service Tag** or **Express Service Code** and click **Submit**.
   b) Click **Submit** and proceed to step 5.
4. If you do not have your computer's service tag or express service code, select one of the following:
   a) **Automatically detect my Service Tag for me**
   b) **Choose from My Products and Services List**
   c) **Choose from a list of all Dell products**
5. On the application and drivers screen, under the **Operating System** drop-down list, select **BIOS**.
6. Identify the latest BIOS file and click **Download File**.
7. Select your preferred download method in the **Please select your download method below window**; click **Download Now**.

   The **File Download** window appears.
8. Click **Save** to save the file on your computer.
9. Click **Run** to install the updated BIOS settings on your computer.

   Follow the instructions on the screen.

System and Setup Password

You can create a system password and a setup password to secure your computer.

Password Type	Description
System password	Password that you must enter to log on to your system.
Setup password	Password that you must enter to access and make changes to the BIOS settings of your computer.

CAUTION: The password features provide a basic level of security for the data on your computer.

CAUTION: Anyone can access the data stored on your computer if is not locked and left unattended.

NOTE: Your computer is shipped with the system and setup password feature disabled.

Assigning a System Password and Setup Password

You can assign a new **System Password** and/or **Setup Password** or change an existing **System Password** and/or **Setup Password** only when **Password Status** is **Unlocked**. If the Password Status is **Locked**, you cannot change the System Password.

NOTE: If the password jumper is disabled, the existing System Password and Setup Password is deleted and you need not provide the system password to log on to the computer.

To enter a system setup, press <F2> immediately after a power-on or reboot.

1. In the **System BIOS** or **System Setup** screen, select **System Security** and press <Enter>.
   The **System Security** screen appears.
2. In the **System Security** screen, verify that **Password Status** is **Unlocked**.
3. Select **System Password** , enter your system password, and press <Enter> or <Tab>.
   Use the following guidelines to assign the system password:
   - A password can have up to 32 characters.
   - The password can contain the numbers 0 through 9.
   - Only lower case letters are valid, upper case letters are not allowed.
   - Only the following special characters are allowed: space, (”), (+), (,), (-), (.), (/), (;), ([), (\), (]), (`).

   Re-enter the system password when prompted.
4. Type the system password that you entered earlier and click **OK**.
5. Select **Setup Password**, type your system password and press <Enter> or <Tab>.
   A message prompts you to re-type the setup password.
6. Type the setup password that you entered earlier and click **OK**.
7. Press <Esc> and a message prompts you to save the changes.
8. Press <Y> to save the changes.
   The computer reboots.

Deleting or Changing an Existing System and/or Setup Password

Ensure that the **Password Status** is Unlocked (in the System Setup) before attempting to delete or change the existing System and/or Setup password. You cannot delete or change an existing System or Setup password, if the **Password Status** is Locked.

To enter the System Setup, press <F2> immediately after a power-on or reboot.

1. In the **System BIOS** or **System Setup** screen, select **System Security** and press <Enter>.
   The **System Security** screen is displayed.
2. In the **System Security** screen, verify that **Password Status** is **Unlocked**.
3. Select **System Password**, alter or delete the existing system password and press <Enter> or <Tab>.
4. Select **Setup Password**, alter or delete the existing setup password and press <Enter> or <Tab>.

   NOTE: If you change the System and/or Setup password, re-enter the new password when promoted. If you delete the System and/or Setup password, confirm the deletion when promoted.
5. Press <Esc> and a message prompts you to save the changes.
6. Press <Y> to save the changes and exit from the System Setup.
   The computer reboots.

4

Diagnostics

If you experience a problem with your computer, run the ePSA diagnostics before contacting Dell for technical assistance. The purpose of running diagnostics is to test your computer's hardware without requiring additional equipment or risking data loss. If you are unable to fix the problem yourself, service and support personnel can use the diagnostics results to help you solve the problem.

Enhanced Pre-Boot System Assessment (ePSA) Diagnostics

The ePSA diagnostics (also known as system diagnostics) performs a complete check of your hardware. The ePSA is embedded with the BIOS and is launched by the BIOS internally. The embedded system diagnostics provides a set of options for particular devices or device groups allowing you to:

- Run tests automatically or in an interactive mode
- Repeat tests
- Display or save test results
- Run thorough tests to introduce additional test options to provide extra information about the failed device(s)
- View status messages that inform you if tests are completed successfully
- View error messages that inform you of problems encountered during testing

CAUTION: Use the system diagnostics to test only your computer. Using this program with other computers may cause invalid results or error messages.

NOTE: Some tests for specific devices require user interaction. Always ensure that you are present at the computer terminal when the diagnostic tests are performed.

1. Power-on the computer.
2. As the computer boots, press the <F12> key as the Dell logo appears.
3. On the boot menu screen, select the **Diagnostics** option.

   The **Enhanced Pre-boot System Assessment** window is displayed, listing all devices detected in the computer. The diagnostics starts running the tests on all the detected devices.
4. If you wish to run a diagnostic test on a specific device, press <Esc> and click **Yes** to stop the diagnostic test.
5. Select the device from the left pane and click **Run Tests**.
6. If there are any issues, error codes are displayed.

   Note the error code and contact Dell.

Battery Status Lights

If the computer is connected to an electrical outlet, the battery light operates as follows:

- **Alternately blinking amber light and white light** — An unauthenticated or unsupported non-Dell AC adapter is attached to your laptop.
- **Alternately blinking amber light with steady white light** — Temporary battery failure with AC adapter present.
- **Constantly blinking amber light** — Fatal battery failure with AC adapter present.

- **Light off** — Battery in full charge mode with AC adapter present.
- **White light on** — Battery in charge mode with AC adapter present.

5

Troubleshooting

Enhanced Pre-Boot System Assessment (ePSA) Diagnostics

The ePSA diagnostics (also known as system diagnostics) performs a complete check of your hardware. The ePSA is embedded with the BIOS and is launched by the BIOS internally. The embedded system diagnostics provides a set of options for particular devices or device groups allowing you to:

- Run tests automatically or in an interactive mode
- Repeat tests
- Display or save test results
- Run thorough tests to introduce additional test options to provide extra information about the failed device(s)
- View status messages that inform you if tests are completed successfully
- View error messages that inform you of problems encountered during testing

CAUTION: Use the system diagnostics to test only your computer. Using this program with other computers may cause invalid results or error messages.

NOTE: Some tests for specific devices require user interaction. Always ensure that you are present at the computer terminal when the diagnostic tests are performed.

1. Power-on the computer.
2. As the computer boots, press the <F12> key as the Dell logo appears.
3. On the boot menu screen, select the **Diagnostics** option.
   The **Enhanced Pre-boot System Assessment** window is displayed, listing all devices detected in the computer. The diagnostics starts running the tests on all the detected devices.
4. If you wish to run a diagnostic test on a specific device, press <Esc> and click **Yes** to stop the diagnostic test.
5. Select the device from the left pane and click **Run Tests**.
6. If there are any issues, error codes are displayed.
   Note the error code and contact Dell.

Diagnostics

Table 6. Device Status Lights

	Turns on when you turn on the computer and blinks when the computer is in a power management mode.
	Turns on when the computer reads or writes data.
	Turns on steadily or blinks to indicate battery charge status.

	Turns on when wireless networking is enabled.

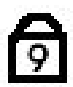
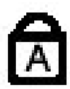
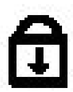
If the computer is connected to an electrical outlet, the battery light operates as follows:

Table 7. Battery Status Lights

Alternately blinking amber light and blue light	An unauthenticated or unsupported non-Dell AC adapter is attached to your laptop.
Alternately blinking amber light with steady blue light	Temporary battery failure with AC adapter present.
Constantly blinking amber light	Fatal battery failure with AC adapter present.
Light off	Battery in full charge mode with AC adapter present.
Solid white light on	Battery in charge mode with AC adapter present.

The lights located above the keyboard indicate the following:

Table 8. Keyboard Status Lights

	Turns on when the numeric keypad is enabled.
	Turns on when the Caps Lock function is enabled.
	Turns on when the Scroll Lock function is enabled.

Beep Codes

The computer may emit a series of beeps during start-up if the display cannot show errors or problems. These series of beeps, called beep codes, identify various problems. The delay between each beep is 300 ms, the delay between each set of beeps is 3 seconds, and the beep sound lasts 300 ms. After each beep and each set of beeps, the BIOS should detect if the user presses the power button. If so, BIOS will jump out from looping and execute the normal shutdown process and power system.

Code	Cause and Troubleshooting Steps
1	BIOS ROM checksum in progress or failure System board failure, covers BIOS corruption or ROM error
2	No RAM detected No memory detected
3	Chipset Error (North and South Bridge Chipset, DMA/IMR/ Timer Error) , Time-Of-Day Clock test failure , Gate A20 failure , Super I/O chip failure , Keyboard controller test failure System board failure
4	RAM Read/Write failure

Code	Cause and Troubleshooting Steps
	Memory failure
5	Real-time clock power fail CMOS battery failure
6	Video BIOS test failure Video card failure
7	CPU - cache test failure Processor failure
8	Display Display failure

LED Error Codes

Diagnostic LED codes are communicated via the Power Button LED. The Power Button LED blinks the corresponding LED codes for the corresponding fault condition. Example: For No Memory detected (LED code 2) , The Power Button LED blinks two times followed by a pause, blinks two times, pause, etc. This pattern continues until the system is powered off.

Code	Cause and Troubleshooting Steps
1	System board: BIOS ROM failure System board failure, covers BIOS corruption or ROM error
2	Memory No memory/RAM detected
3	Chipset Error (North and South Bridge Chipset, DMA/IMR/ Timer Error) , Time-Of-Day Clock test failure , Gate A20 failure , Super I/O chip failure , Keyboard controller test failure System board failure
4	RAM Read/Write failure Memory failure
5	Real-time clock power fail CMOS battery failure
6	Video BIOS test failure Video card failure
7	CPU - cache test failure Processor failure
8	Display Display failure

6 Technical Specifications

NOTE: Offerings may vary by region. For more information regarding the configuration of your computer, click Start (Start icon) → **Help and Support**, and then select the option to view information about your computer.

Table 9. System Information

Feature	Description
Chipset	Intel HM76
DRAM bus width	64 bits and 128 bits
Flash EPROM	6 MB

Table 10. Processor

Feature	Description
Type	• Intel Celeron Dual Core ULV • Intel Pentium Dual Core ULV • Intel Core i3 ULV • Intel Core i5 ULV
L1 cache	32 KB
L2 cache	256 KB
L3 cache	up to 4 MB

Table 11. Memory

Feature	Description
Memory connector	two internally accessible DDR3/DDR3L connectors
Memory capacity	2 GB and 4 GB
Memory type	1600 MHz, dual channel DDR3 configuration
Minimum memory	2 GB, 4 GB, 6 GB, and 8 GB
Maximum memory	8 GB

Table 12. Audio

Feature	Description
Type	2 channel high definition audio
Controller	Realtek ALC3221

Feature	Description
Stereo conversion	24-bit (analog to digital and digital to analog)
Interface	Intel HDA bus
Speakers	2 x 2 W
Volume controls	program menu and keyboard media-control keys

Table 13. Video

Feature	Description
Video type	LVDS
Video Controller:	
UMA	Intel HD Graphics 3000/4000 (shared memory)
Discrete	AMD Radeon HD 7670M (1 GB DDR3)
Data bus	128 bits
External display support	HDMI

Table 14. Camera

Feature	Description
Camera Resolution	0.92 megapixels
Video Resolution (maximum)	1280 x 720 (HD) at 30 fps (maximum)
Diagonal viewing angle	66°

Table 15. Communication

Feature	Description
Network adapter	10/100 Mbps Ethernet LAN on Motherboard (LOM)
Wireless	• Wi-fi 802.11 b/g/n • bluetooth 4.0

Table 16. Ports and Connectors

Feature	Description
Audio	one headphone/microphone combo port (headset)
Video	one 19-pin HDMI connector
Network adapter	one RJ45 port
USB	• two USB 3.0 ports • one USB 2.0 port • one USB 2.0 port with window debug

Feature	Description

NOTE: The powered USB 3.0 connector also supports Microsoft Kernel Debugging.

Media card reader	one 8-in-1 slot

Table 17. Display

Feature	Description
Type	15.6 inches HD
Dimensions:	
Height	344.23 mm (13.55 inches)
Width	193.54 (7.61 inches)
Diagonal	396.24 mm (15.60 inches)
Active area (X/Y)	344.23 x 193.54 mm (13.55 inches x 7.61 inches)
Maximum Brightness	200 nits
Operating angle	0° (closed) to 140°
Refresh rate	60 Hz
Minimum Viewing angles:	
Horizontal	40°/40°
Vertical	10°/30°
Pixel pitch	0.252 mm x 0.252 mm

Table 18. Keyboard

Feature	Description
Number of keys	US 102, Brazil 105, UK 103 and Japan 106

Table 19. Touchpad

Feature	Description
Active Area:	240 DPI
X-axis	56.00 mm (2.20 inches)
Y-axis	100.00 mm (3.94 inches)

Table 20. Battery

Feature	Description
Type	• 4-cell “smart” lithium ion (40 WHr) • 6-cell “smart” lithium ion (65 WHr)
Dimensions:	

Feature	Description
Height	12.50 mm (0.49 inch)
Width	66.00 mm (2.60 inches)
Depth	291.70 mm (11.48 inches)
Weight	0.30 kg (0.66 lb)
Life span	600 discharge/charge cycle
Voltage	• 14.80 VDC (4 cells) • 11.10 VDC (6 cells)
Temperature range:	
Operating	0 °C to 35 °C (32 °F to 95 °F)
Non-Operating	–40 °C to 65 °C (–40 °F to 149 °F)
Coin-cell battery	3 V CR2032 lithium ion

Table 21. AC Adapter

Feature	Description
Type:	
integrated video card	65 W
discrete video card	90 W
Input voltage	100 VAC to 240 VAC
Input current (maximum)	1.50 A/1.60 A/1.70 A/2.50 A
Input frequency	50 Hz–60 Hz
Output power	65 W/90 W
Output current	3.34 A/4.62 A
Rated output voltage	19.50 VDC
Temperature range:	
Operating	0 °C to 40 °C (32 °F to 104 °F)
Non-Operating	–40 °C to 70 °C (–40 °F to 158 °F)

Table 22. Physical

Feature	Description
Height	25.30 mm (0.99 inches)
Width	376.00 mm (14.80 inches)
Depth	259.00 mm (10.19 inches)
Weight (minimum)	2.30 kg (5.07 lb)

Table 23. Environmental

Feature	Description
Temperature:	
Operating	0 °C to 35 °C (32 °F to 95 °F)
Storage	–40 °C to 65 °C (–40 °F to 149 °F)
Relative humidity (maximum):	
Operating	10 % to 90 % (non-condensing)
Storage	10 % to 95 % (non-condensing)
Altitude (maximum):	
Operating	–15.2 m to 3048 m (–50 to 10,000 ft) 0° to 35°C
Non-Operating	–15.2 m to 10,668 m (–50 ft to 35,000 ft)
Airborne contaminant level	G1 as defined by ISA-S71.04-1985

7

Contacting Dell

NOTE: If you do not have an active Internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog.

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical support, or customer service issues:

1. Visit **www.dell.com/support**.
2. Select your support category.
3. Verify your country or region in the Choose a Country/Region drop-down menu at the top of page.
4. Select the appropriate service or support link based on your need.